

EP Application

"OFDM Diversity Transmission"

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Claims:

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1. Transmission diversity device, having:

- a plurality of antenna elements (2,3),

- a plurality of processing devices respectively connected to one of the antenna elements (2, 3), and

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- phase comparison and adjustment means (10, 19) for comparing phases of signals received at the antenna elements (2, 3) and for adjusting the phases of signals transmitted by the antenna elements (2, 3) according to the result of the comparison (10),

characterized in that

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the transmission diversity device (1) is designed for a multicarrier transmission (4, 5) and compares the phases of at least one subcarrier of the multicarrier transmission with the phase of at least one subcarrier of at least one other antenna element (2,3) and adjusts (19) it subsequently for a transmission.

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2. Transmission diversity device according to claim 1,
characterized in that
it is designed for a OFDM transmission.

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3. Transmission diversity device according to anyone of the preceding claims,
characterized in that
it comprises a subcarrier phase comparison dependent amplitude adjustment function.

4. Transmission diversity device according to anyone of the preceding claims, characterized in that it comprises a function of averaging (12) the phase differences of a plurality of subcarriers respectively received at one antenna element (2, 3).

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5. Transmission diversity device according to anyone of the preceding claims, characterized in that it comprises the function of frequency adjusting (11) the phase differences of the subcarriers received respectively at one antenna element (2, 3).

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6. Transmission diversity device according to anyone of the claims 1 to 3, characterized in that it comprises the function of comparing (10) only predetermined subcarriers of different antenna elements (2, 3).

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7. Method for a wireless transmission diversity transmission by means of a plurality of antenna elements (2, 3) and a plurality of processing devices respectively connected to one of the antenna elements (2, 3), comprising the steps of

20 - phase comparison (10) of phases of a signal received at the antenna elements (2, 3) and adjustment (19) of the phases of signals to be transmitted by the antenna elements (2, 3) according to the result of the comparison (10),

characterized by the steps of

25 - comparing (10) the phase of at least one subcarrier of a multicarrier transmission for each antenna element (2, 3) with the phase of at least one subcarrier of at least one other antenna element and
- adjusting (19) it subsequently for a transmission..

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8. Method according to claim 7, characterized in that the step of comparing (10) is repeated at least twice to calculate an average value used for the step of adjusting (19).

9. Method according to claim 7 or 8,
characterized in that
the multicarrier transmission is a OFDM transmission.

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10. Method according to anyone of claims 7 to 9,
characterized by
the step of amplitude adjustment depending on the subcarrier phase comparison.

10 11. Method according to anyone of claims 7 to 10,
characterized by
the step of averaging (12) the phase differences of a plurality of subcarriers respectively
received at one antenna element (2, 3).

15 12. Method according to anyone of claims 7 to 11,
characterized by
the step of frequency adjusting (11) the phase differences of the subcarriers received
respectively at one antenna elements (2, 3).

20 13. Method according to anyone of claims 7 to 10,
characterized by
the step of comparing (10) only predetermined subcarriers of different antenna elements
(2, 3).

25 14. Method according to anyone of claims 7 to 10,
characterized that
the step of comparing (10) comprises the step of correlating the time domain data.

30 15. Method according to anyone of claims 7 to 14,
characterized that
in case it is detected that at any of the antenna elements (2, 3) no signal or a signal with
an amplitude below a predetermined threshold is received, said antenna element (2,3) is
not used for a transmission.

it is only applied in the base station of a wireless transmission system.

17. Computer program performing, when loaded in a memory of a transmission diversity device, a method according to anyone of claims 7 to 16.